

Weekly Report for 2015/11/30-2015/12/06

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Progress

1. TCPTree Project

2. Large Graph Visualization

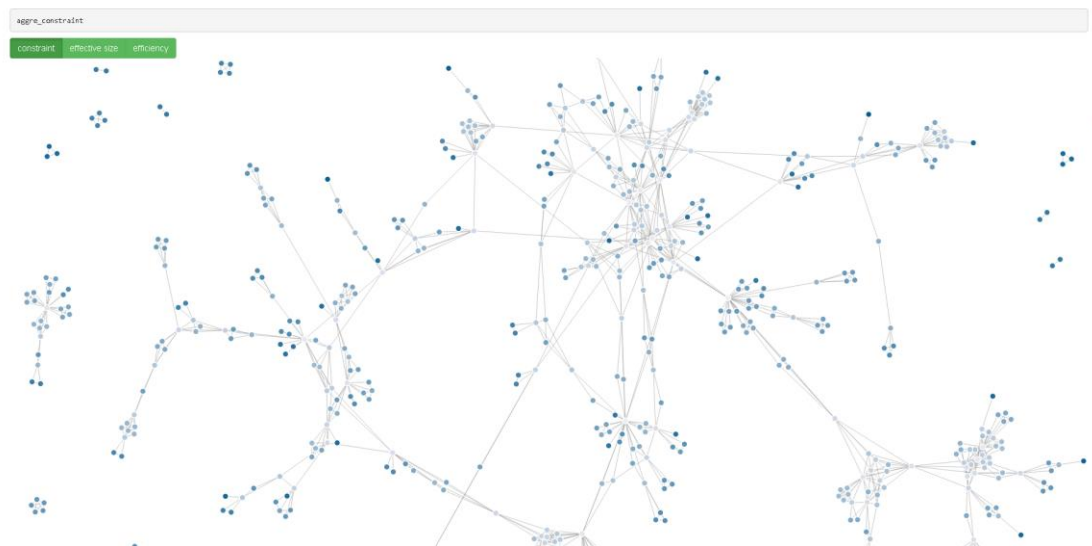
Huawei send us new data, including ego network data and community data. I extracted ego networks of 10 random node in the data. The range the number of nodes in the ego networks is from 432 to 1891 and the range of the number of edges is from 1393 to 6064.

We will test the performance of our current system under the new dataset.

3. Vis 2016 Paper

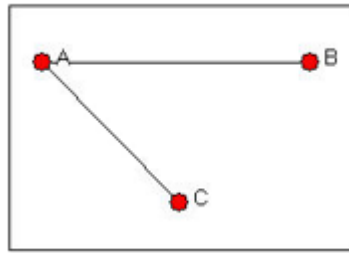
This week I firstly build the framework of the project. I tried the full-stacked framework MEANJS, but my npm encountered too many problems while installing packages MEANJS requires. I also found that the document of the latest version is not complete. Therefore I decided to build the framework manually.

The current framework is based on nodejs, express and angularjs.



The three metrics of structural holes are shown in the figure.

The definition of structural hole:



“A structural hole is a relationship of nonredundancy between two contacts”
 In simple terms, if two nodes are not connected directly, there is a structural hole between them, such as B and C in the figure. If a node connect two disconnected nodes, this node spans a structural hole.

The problem with data:

For collaboration networks, a main problem is that many author appear only once. I think it is better to use the collaboration network of productive authors or well-known professors, studying their collaboration patterns by structural holes theory or other social science theories.

Five research questions related to structural holes:

1. Identify the structural holes and structural hole spanners in a dynamic network
2. The relationship of structural hole change and the community evolution.
3. The temporal patterns of structural hole spanners.
4. The pattern of generation of structural holes and structural holes spanners.
5. The temporal difference of behaviors of nodes near the holes and nodes far away from holes.

Project plan and milestones:

Paper:

12.30 Finish related work

1.20 Finish introduction

2.10 Finish visual design

2.30 Finish discussion

3.21 Finish abstract

3.25 Finish evaluation

System:

Evaluation:

Data:

Plan

1. TCPTree Project

2. Large Graph

Initial layout of community

Finish the ego network visualization

3. Vis 2016 Paper

Refine the idea evaluation ppt

Visualize the structural holes in a small dynamic network